3.21 DRAWING AND DESIGN (449)

3.21.1 Drawing and Design Paper 1 (449/1)

SECTION A (50 marks)

*Answer **all** the questions in this section on the answer sheet provided.*

1 (a) List **four** characteristics of a good technical drawing paper. (2 marks)

(b) Given that paper size A_4 is 210 x 297. Determine the sizes of the following paper sizes

(i) A_0;

(ii) A_3. (2 marks)

(c) State **two** precautions in handling a T-square. (2 marks)

2 (a) List **six** computer programmes that can be used to produce a drawing. (3 marks)

(b) Define the term "mock-up" and state its purpose in the design process. (2 marks)

3 Name the **three** groups of metals and give **one** example in each group. (3 marks)

4 (a) **Figure 1** is drawn to scale of 1:2.

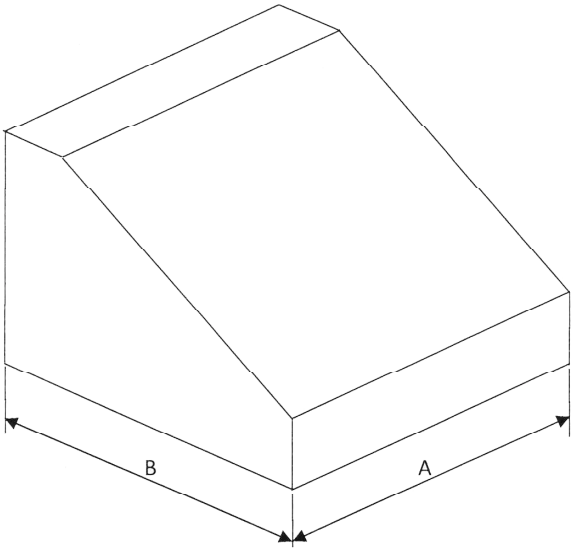


Figure 1

Determine:

(i) distance A;

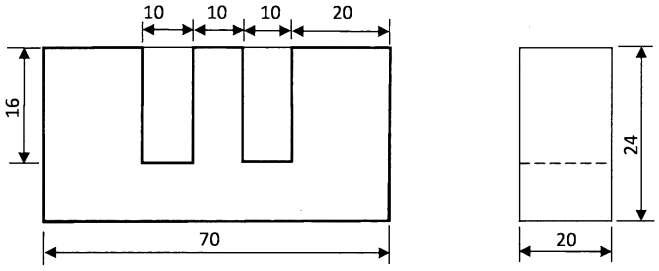
(ii) the angle of the slanting face. (3 marks)

(b) Sketch to show how the diameters of eccentric circles on a solid piece can be dimensioned. (3 marks)

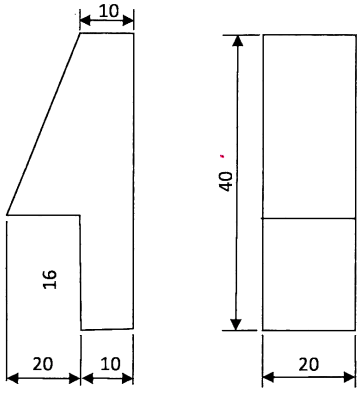
5 Define the following terms as applied to business enterprises:

(a) fixed assets;
(b) deficit;
(c) liability. (3 marks)

6 **Figure 2** shows two views of two parts of a machine component drawn in first angle projections. Sketch the assembled parts in oblique projection. (6 marks)



PART 1



PART 2-2OFF

Figure 2

7 **Figure 3** shows the front elevation and an incomplete plan of a truncated square-based pyramid:

(a) complete the plan;
(b) draw the true shape of the cut face.

(5 marks)

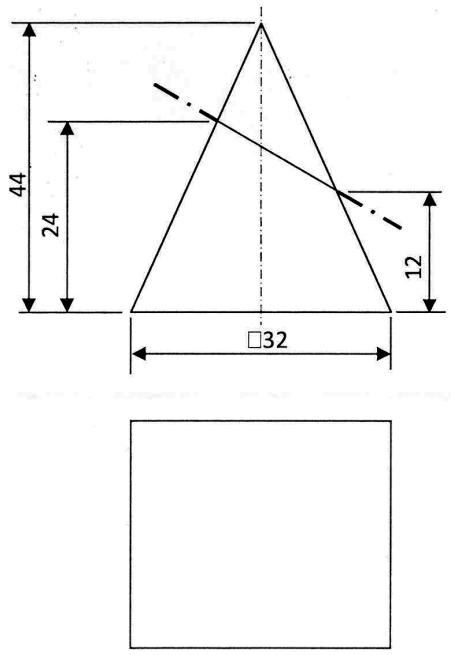


Figure 3

8 Draw the locus of the end of a string when it is unwound from a 30 mm square prism for one complete revolution. (6 marks)

9 **Figure 4** shows a block drawn in first angle projection. Sketch the block in oblique taking AB as the lowest edge. (4 marks)

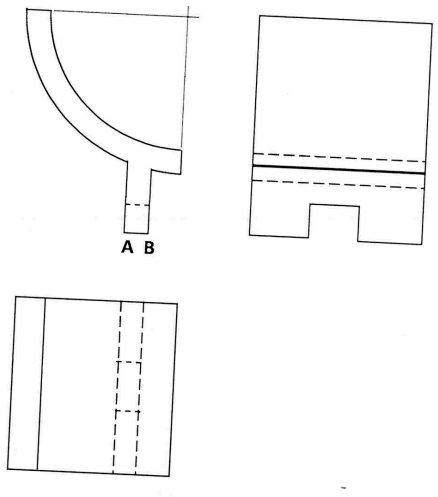


Figure 4

10 **Figure 5** shows an isometric block. Sketch three views of the block in first angle orthographic projection. (6 marks)

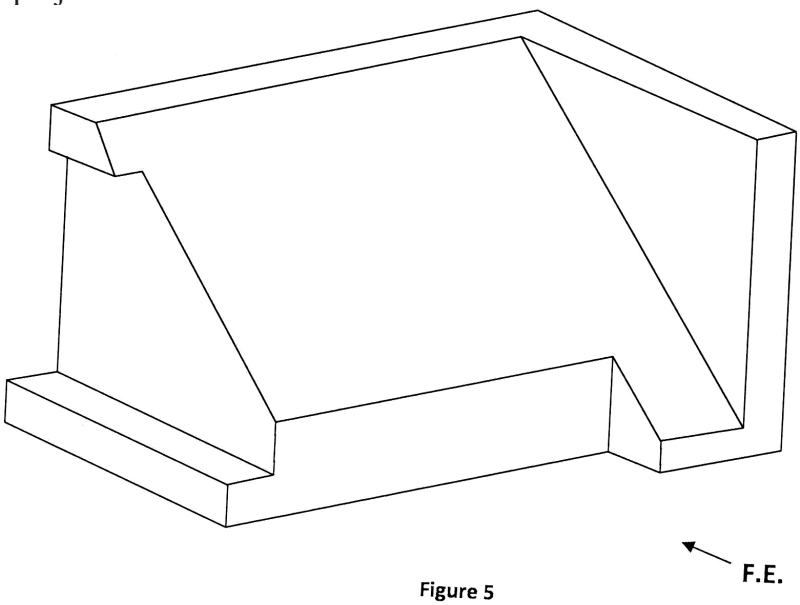


Figure 5

SECTION B (20 marks)

*This question is **compulsory**. Candidates are advised to spend not more than one hour on this question.*

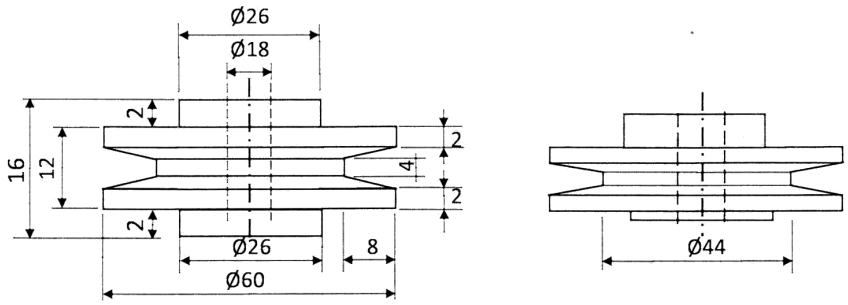
11 **Figure 6** shows parts of a mechanical component drawn in first angle projection. Assemble the parts and draw FULL SIZE, the following:

(a) sectional front elevation along the cutting plane P-P;

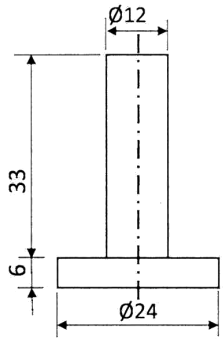
(b) end elevation;

(c) insert three leading dimensions.

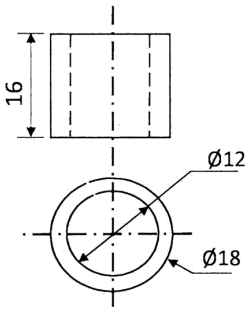
Unspecified dimensions are left to the candidates discretion. Hidden details are not required. **(Use the A3 paper provided)**. (20 marks)



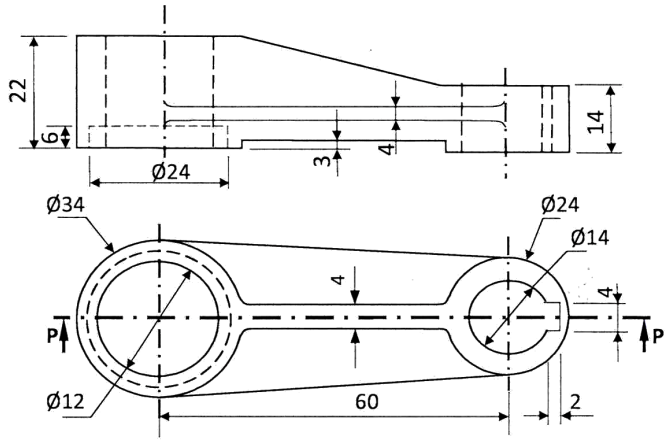
PART 1-PULLEY



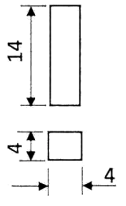
PART2 –PIN



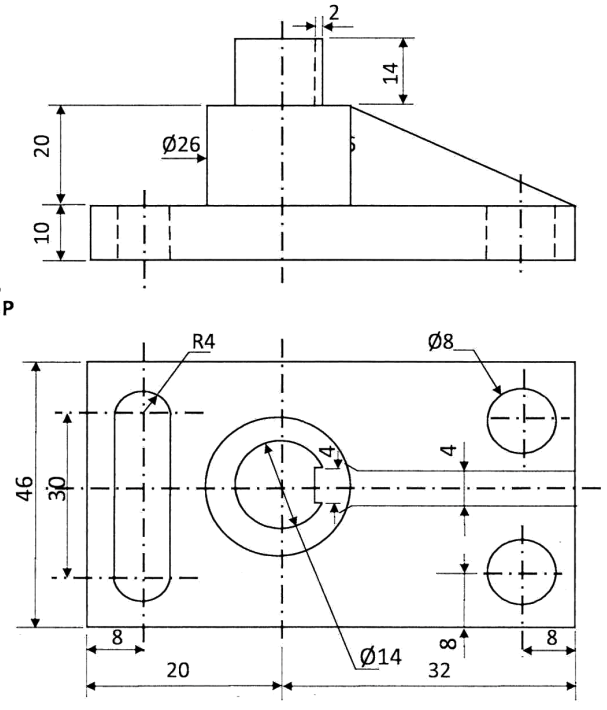
PART 3- BUSH



PART 4 -CONNECTOR



PART 6 –KEY



PART 5 -BASE

Figure 6

SECTION C (30 marks)

*Answer any **two** questions from this section.*

12 **Figure 7** shows the front elevation and an incomplete plan of a truncated hexagonal prism.

(a) copy the views and complete the plan;

(b) draw the surface development of the prism (omit the flaps).

(15 marks)

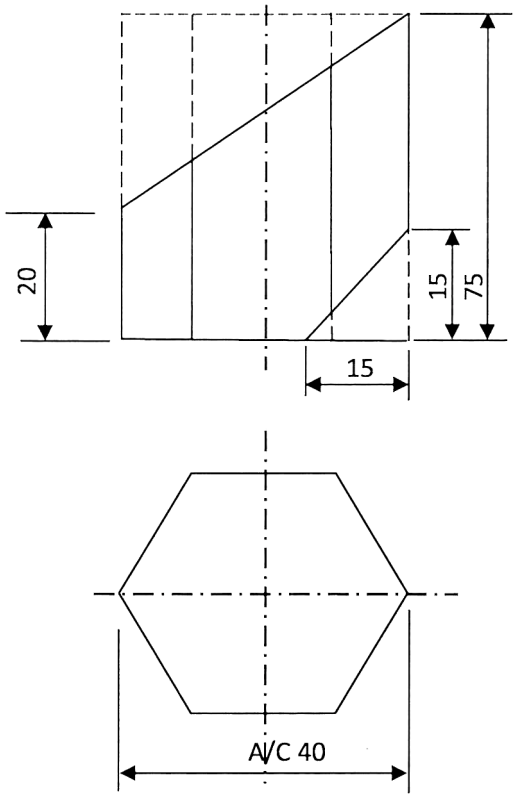


Figure 7

13 **Figure 8** shows an inclined plan of a block and its front elevation.

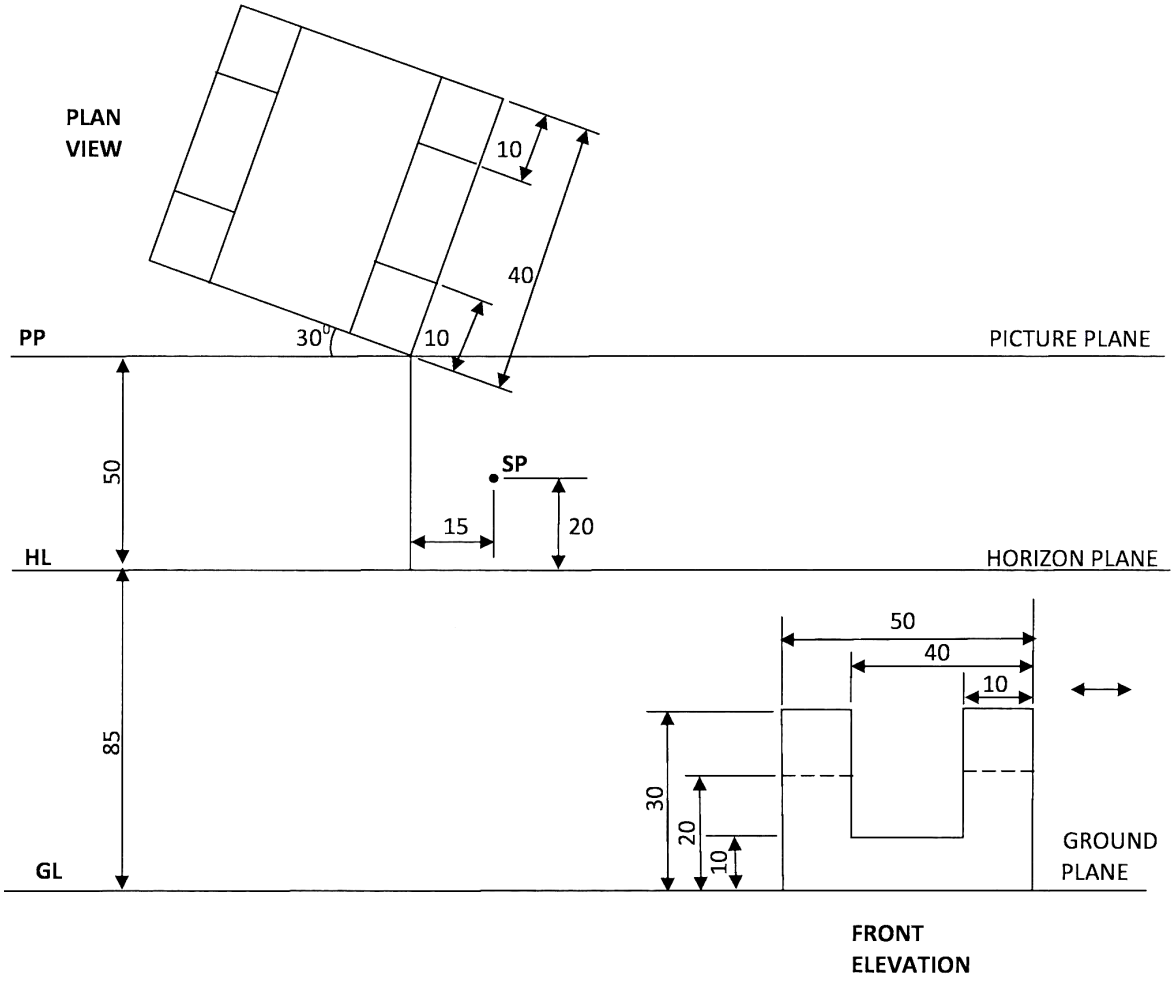


Figure 8

Copy the given layout and draw the two point perspective of the block showing all construction details. (15 marks)

14 **Figure 9** shows two intersecting square tubes A and B drawn in 1st angle projection.

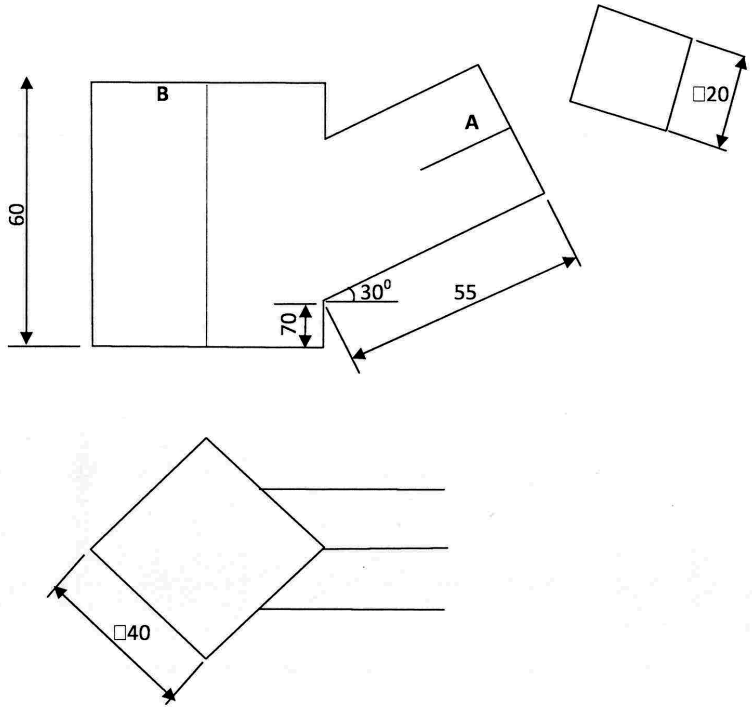


Figure 9

(a) copy the figure and complete:

(i) the front elevation

(ii) the plan.

(b) Draw the development of tube B.

(15 marks)